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ABSTRACT

The study investigated alternative explanations for differences in reading achievement between pairs of handicapped students exhibiting comparable amounts of academic engaged time. Forty-six students in grades 2-4 from urban and suburban districts participated; 16 were classified as learning disabled (LD), 14 as emotionally/behaviorally disturbed (EBD), and 16 as educable mentally retarded (EMR). Explanations investigated were student demographics, cognitive functioning, home and family factors, teacher stress, student cognitions (including cognitive style), student motivation, behavior, and conditions in the learning environment. Creating composite variables (specifically attitude/modeling by significant others, stress/chaos in the child's environment, and home-school cooperation) was not helpful in explaining reading achievement differences for the matched sample. Of all factors investigated, only cognitive ability served as a consistent explanation for differences in reading achievement for students matched on academic engaged time. In almost all cases, higher achieving students scored higher on measures of cognitive ability than their matched lower achieving peers. Results do not otherwise indicate any clearcut pattern of factors important for reading achievement. It is suggested that diagnosticians need to engage in problem-solving for individual children rather than labeling students as LD, EBD, or EMR. (Author/JW)

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University of Minnesota

RESEARCH REPORT NO. 10

ALTERNATE EXPLANATIONS FOR LEARNING DISABLED, EMOTIONALLY DISTURBED, AND EDUCABLE MENTALLY RETARDED STUDENTS' READING ACHIEVEMENT

James E. Ysseldyke, Deborah Bakewell,
Sandra Christenson, Paul Muyskens, James G. Shriner,
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INSTRUCTIONAL ALTERNATIVES PROJECT

July, 1988

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Abstract

Several alternate explanations for differences in reading achievement between pairs of handicapped students who had comparable amounts of academic engaged time were explored. Forty-six students in grades 2-4 from urban and suburban districts participated; 16 students were classified as learning disabled (LD), 14 as emotionally/behaviorally disturbed (EBD), and 16 as educable mentally retarded (EMR). The explanations investigated were cognitive functioning, home and family factors, teachers' stress, student cognitions, student motivation, conditions in the learning environment, behavior, and student demographics. Three composite factors, stress and chaos in the child's life, degree of home-school cooperation, and parental attitudes and modeling, also were explored. Of all factors investigated, only cognitive ability served as a consistent explanation for differences in reading achievement for students matched on academic engaged time. In almost all cases, higher achieving students scored higher on measures of cognitive ability than their matched lower achieving students. While other factors did not provide consistent explanations for differences among students in reading achievement, regardless of categorical designation, several isolated, interesting findings did emerge. Methodological limitations of the study are presented, as are implications of the findings for assessment practices.

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Alternate Explanations for Learning Disabled, Emotionally Disturbed, and Educable Mentally Retarded Students' Reading Achievement

The ability to read is the most important skill for children to acquire in school, not only for academic success but also for later success in employment, leisure, and every day living. Despite the importance of reading, an alarming number of American students fail to acquire functional reading skills. According to the National Commission on Excellence in Education (1983), 13% of high school graduates are functionally illiterate, and another 17% are barely competent. The rate of functional illiteracy may range as high as 40% among minority youth. Why this failure of students to acquire reading skills? Several possible explanations have been proposed for academic failure. Most research, however, has not focused solely on reading achievement, but on achievement across many domains. Research on several factors important to achievement are reviewed in this paper, followed by results of a study on factors important to reading achievement.

Educators and psychologists have long been concerned about the relationship between academic engaged time and achievement. Several comprehensive reviews of research on time and its relationship to school learning have been written (Anderson, 1984; Graden, Thurlow, & Ysseldyke, 1982; Karweit, 1983). In general, researchers have demonstrated: (a) there are school and teacher differences in time allocated to instruction; when aggregated over the school year, large differences between schools and classrooms in opportunity to learn in various curriculum areas result; (b) students spend a relatively small percentage of the school day actively engaged in academics; (c) the percentage of time engaged varies considerably across classrooms, resulting in large differences among students in time actively involved in learning; (d) engaged

time rates depend on a variety of organizational factors (classroom management, class size, interruptions), content area, and the point in time during the instructional period; and (e) engaged time is consistently though moderately related to student achievement.

Time-based research is criticized on several counts. First, it is said that attention is drawn away from the quality of learning and toward the quantity of time spent learning. Confrey (1981) argued that what occurs during a time period, not simply accumulation of time, is most critical for student learning. Thus, assignment of "busywork" can result in high time-on-task rates for a student without concomitant increases in learning. Karweit (1983) criticized time research because: (a) time appears to be at most a moderate predictor of achievement, (b) teacher, student, and classroom variation in engaged time may not be as easily altered as suggested by Bloom (1980), and (c) large increases in instructional time may be required for relatively small changes in achievement. In her review and re-analysis of studies of engaged time and achievement, Karweit concluded that there is a consistent, but low, positive correlation (r=.09-.43) between the two when initial ability is controlled.

In time research there is also a failure to account for a wide variety of student and environmental factors, in and out of the school, that have been shown to influence learning. These factors may serve as explanations for the differing achievement levels often obtained by students demonstrating comparable academic engaged time. In explanations for this discrepancy, researchers frequently focus upon variables relating to motivation, social/emotional skills, cognition, behavior ratings, teacher stress, home and family factors, and conditions that place the student at risk for academic failure.

Several investigators have examined how motivation has affected academic achievement (Byrne, 1984; Dweck & Elliott, 1983; Gottfried, 1985). While the domain encompassed by motivation is broad and is defined differently in different studies, researchers generally conclude that motivation exerts a strong influence upon academic performance and achievement.

Social/emotional factors such as anxiety (Dweck & Elliott, 1983; Patten, 1983), attitudes and expectancies (Byrne, 1984; Rogers & Saklofske, 1985), personality and temperament (Rutter, 1980; Schor, 1985; Sharma, 1985), and social skills and activities (Deschler, Schumaker, Warner, Alley, & Clark, 1980; Gresham, Elliott, & Black, 1987; Stumme, Gresham, & Scott, 1983) have been found to be related to academic achievement, but results frequently are conflicting due to different operational definitions of constructs, characteristics of the subject pool, and measurement methodologies (e.g., Achenbach & Edelbrock, 1978).

The strong relationship between cognitive processing and academic achievement has been well documented (Bloom, 1976; Froman & Owen, 1977; Grossman & Clark, 1982; Wong, 1986). Given that academic tasks are cognitive in nature, IQ and cognitive entry behaviors are thought to constitute a necessary but not sufficient condition for the achievement of learning tasks.

Classroom behavior affects student learning, and studies have shown that mildly handicapped students often exhibit behavior that impedes their academic performance. McKinney and Speece (1983) reported that "a number of studies have shown that classroom behavior predicts academic achievement (Hoge & Luce, 1979; Schaefer, 1981) and that behavioral measures represent variation in achievement that is largely independent of IQ (McKinney, Mason, Perkerson, & Clifford, 1975)" (p. 150). Behavioral patterns that impair academic achievement have been

documented for LD students (McKinney & Feagans, 1983, 1984; McKinney & Speece, 1983). Teachers have described LD students as less task-oriented and independent in comparison with classmates, and have indicated that they display less on-task behavior and demand more interaction with the teacher. McKinney and Feagans (1983) stated:

> Although learning disabilities (LD) are usually defined in terms of deficits in cognitive and linguistic processes, evidence has accumulated that LD children also display maladaptive behaviors which impair their academic performance and lead to their identification as requiring special services. (p. 360)

The behavioral pattern appears to exist already at the time of LD identification. It has been reported that observation shows that behavior improves over time at a rate similar to the improvement in non-LD children's behavior (McKinney & Feagans, 1984).

Only preliminary research has been conducted in the area of teacher stress. It appears, however, that teacher stress has a significant effect upon student achievement by influencing students' attitudes, aspirations, and learning environments (Coleman, 1966; Glasman & Biniaminov, 1981).

Home factors have been shown to strongly influence school achievement, particularly in studies using global social status and family structure measures (Coleman 1966; Mosteller & Moynihan, 1972). More specific home and family variables positively related to academic achievement include homework (Goldstein, 1960; Walberg, Paschal, & Weinstein, 1985), parental expectations for academic performance (Bocock, 1972; Keeves, 1972; Peaker, 1967), and parental involvement with the schools and their child's education (Epstein, 1984; Hewison & Tizard, 1980). However, the strength of the relationships for

these variables varies considerably throughout the research. The relationship between television viewing time and academic achievement has been studied extensively. Still, discrepant findings result in equivocal conclusions (Neuman, 1986; Williams, Haertel, Haertel, & Walberg, 1982).

Adopting a comprehensive perspective, Samuels (1986) described conditions in a child's learning environment that place the child at risk for academic failure. These conditions include characteristics of the home, such as degree of support for school efforts and the moral standards and values fostered in the home; characteristics of the school environment, such as the strength of administrative leadership and the degree of task orientation within the classroom; characteristics of the wider community, such as degree of support for school efforts; and motivational and attitudinal characteristics of students.

Reading probably is the most important skill to be gained in school. Most students do achieve the goal of learning to read, but for those who do not, it is cause for great concern among teachers, parents, school administrators, and the students themselves. The majority of students referred to special education are referred because of reading problems (see Bruininks, Thurlow, Lewis, & Larson, 1988).

Several explanations exist for reading failure; the various explanations include cognitive deficiencies, perceptual processing disorders, lack of motivation, lack of adequate instruction, or limited intellectual stimulation and experience at home. The purpose of this descriptive study was to consider several alternative explanations for reading achievement differences in students who have had comparable amounts of academic engaged time, and to determine whether these factors vary among different categories of mildly handicapped

students (learning disabled - LD, emotionally/behaviorally disturbed - EBD, and educable mentally retarded - EMR). The research questions addressed were:

1. To what extent are the differences in reading achievement for mildly handicapped students influenced by:
    - home and family factors
    - teacher stress
    - cognitive functioning
    - student cognitions
    - student motivation
    - conditions in the learning environment
    - behavior
2. To what extent are differences in reading achievement for mildly handicapped students influenced by:
    - stress or chaos in the child's life
    - degree of home-school cooperation
    - parental attitudes and modeling
3. Are there differences in factors that influence reading achievement for learning disabled, emotionally/behaviorally disturbed, and educable mentally retarded students?

Method

Subjects

Subjects were 46 students from grades 2-4 in 17 schools in one urban and one suburban school district. The subjects formed 23 pairs in which the two students had approximately equivalent academic engaged times, but discrepant levels of reading achievement. During the first year of an ongoing project,

academic engaged time data and achievement data were collected on 92 mildly handicapped students. The CISSAR system, developed by Greenwood, Delquadri, and Hall (1978), was used to collect data on academic engaged time (AET). The CISSAR system is a momentary time sampling technique. Students were observed for one school day. Students' reading achievement was measured on the Basic Achievement Skills Individual Screener (BASIS) (The Psychological Corporation, 1983). A student was considered to be a potential subject for this post hoc matching study if the following criteria were met: (a) AET was comparable to the AET of another student within the same grade and handicapping condition (comparable engaged time was defined as within 1 standard deviation), and (b) reading achievement score was significantly different at the .05 level from the score of the same other student. Sixty-six handicapped students (22 LD, 24 EBD, 20 EMR) were potential subjects using these criteria. Mean AET for potential matched pairs varied by less than 11 minutes per day across all handicapping conditions ($\underline{M}$ = 10.9 min, range = 10.2-11.3). Potential LD matched pairs' reading achievement differed by 3.7 grades, EBD matched pairs by 6.3 grades, and EMR matched pairs by 2.3 grades. Several of the 66 students were unable to participate in the study due to parent refusal or the requirement that a student could not be in more than one pairing. The final sample included 46 students (16 LD, 14 EBD, 16 EMR).

Demographic data for all subjects are presented by category in Table 1. The mean age for all subjects was 119 months; the range was 98-139 months. EMR students were slightly older than LD and EBD students. For all groups, more than half of the students were male, with the EBD group having a higher percentage of males than the other two groups. For all groups, more than half

Table 1

Student Demographic Data by Category[a]

Demographic Data	Category			
	LD	EBD	EMR	Total
N	16	14	16	46
Age				
M	117.4	117.5	123.0	119.0
Range	98-138	103-132	106-139	98-139
Sex				
Male	8	11	9	28
Female	8	3	7	18
Race				
Non-minority	11	9	9	29
Minority	5	5	7	17
Grade				
2	10	4	6	20
3	0	4	4	8
4	6	6	6	18

[a]Numbers in cells denote numbers of students, with the exception of years for student age.

of the students were non-minority, with the LD group having the highest percentage of non-minority students. Minority students were Black, Asian, Native American or other (i.e., undetermined minority race/ethnicity). Other than the absence of LD students in grade 3, the total number of students in each grade was fairly consistent across the handicapping conditions.

The 46 students were taught by 23 regular education and 29 special education teachers. Most teachers were female (90.4%); only 5 teachers (9.6%) were male. Their mean number of years of teaching was 16.6 (range = 1-35). Most teachers held a bachelor's degree plus additional credits (40.4%) or a master's degree plus additional credits (30.8%), and 1.9% had a Ph.D. Approximately half of the special education teachers (n = 14; 48.3%) held a single licensure (LD, EBD or EMR). The remaining teachers (n = 15) were certified in two special education areas.

Demographic data for families are presented in Table 2. Most LD children lived with both parents, whereas most EBD students lived with their mother. Approximately half of the EMR students lived with their mother and half with both parents. The majority of children in all groups had 1 to 2 siblings. Families of LD children tended to be somewhat larger than families of EBD or EMR students. Very few subjects lived with other children in addition to their siblings. Most of the parents in the sample had finished high school and had obtained either technical or university training; relatively few parents had attained university degrees. Mothers in this sample tended to be better educated than fathers; however, the educational level of fathers of 18 students was unknown.

Table 2

Family Demographic Data by Student Category[a]

Demographic Data	Category			
	LD	EBD	EMR	Total
Person Interviewed				
Mother only	13	10	12	35
Father only	-	1	2	3
Both	3	2	1	6
Missing	-	1	1	2
Person(s) Child Lives With				
Mother	3	8	6	17
Both parents	13	4	7	24
Other	-	1	2	3
Missing	-	1	1	2
Siblings				
0	2	3	4	9
1-2	7	9	9	25
3 or more	7	1	2	10
Missing	-	1	1	2
No. of Other Children in Home				
0	16	12	13	41
1-2	-	-	1	1
3 or more	-	1	1	2
Missing	-	1	1	2

Educational Level of Parents	LD		EBD		EMR		Total	
	M	F	M	F	M	F	M	F
Less than elementary	-	-	-	-	1	1	1	1
Some high school	-	-	1	1	5	-	6	1
Finished high school	5	3	4	1	3	2	12	6
Technical training	-	5	1	1	3	3	4	9
Some university	7	2	4	3	3	3	14	8
University degree	4	1	2	-	-	1	6	2
Higher degree	-	1	1	-	-	-	1	1
Unknown	-	4	1	8	1	6	2	18

[a]Numbers in each cell denote number of students.

Measures

We examined the extent to which several factors were related to differences in academic achievement among the matched pairs: home and family factors, teacher stress, cognitive functioning, student cognitions, student motivation, conditions in the learning environment, and student behavior.

Home factors. A semi-structured home interview, which was a modification of interviews developed by Marjoribanks (1979), Egeland (personal communication, 1985) and Garmezy (personal communication, 1985), was used to obtain information about the child's living situation, weekly routine/use of out-of-school time, homework practices, the family's attitudes toward the child's education, and the nature and extent of stressful events in the family. Ratings were obtained on the degree to which the child's home was characterized by established routine, lack of stress, security, opportunity to develop self-responsibility, realistic expectations for the child's education and academic success, valuing of education, assistance and support for completion of academic work, organization, and parental support for school efforts. Additional ratings of the child's use of out-of-school time included: the degree to which (a) the parent(s) provided direction for out-of-school time, (b) the child was involved in productive activities, (c) the child watched television, and (d) the child read in the home. All but two of the items were rated on a 4-point Likert-type scale, with "1" indicating "not at all like the child's home environment" and "4" indicating "very much like the child's home environment." The exceptions were that amount of TV watching and reading done out of school were rated in three categories: a lot, average, or a little, based on the mean and standard deviation for the entire sample.

Teacher stress/hassle. An open-ended, 7-item interview was developed to obtain information about the amount of stress experienced by the teacher for teaching both handicapped and nonhandicapped students. Teachers were asked the advantages and disadvantages of teaching in general, and of teaching at their current school, in particular. The interview also asked questions about school administrative leadership and the degree to which the parents were supportive of teacher efforts and recommendations.

Cognitive. The cognitive factor included verbal, performance, and full scale IQs from the Wechsler Intelligence Scale for Children-Revised (WISC-R) (Wechsler, 1974).

Student cognitions. The Student Cognitions Questionnaire, a modification of a self-report Cognitive Processing Questionnaire (Peterson, Swing, Stark, & Waas, 1984), was used to measure students' active thinking process during instruction. The questionnaire includes 21 items grouped into five subscales: Poor Listening, Positive Listening, Cautious Style, Active Thinker, and Understanding.

Student motivation. Student motivation was measured using A Scale of Intrinsic Versus Extrinsic Orientation in the Classroom (Harter, 1980). This self-report measure consisted of 30 items grouped into five subscales: Challenge, Curiosity, Mastery, Judgment and Criteria. It was designed to measure students' intrinsic-extrinsic orientation to classroom tasks and their ability to make judgments about their school performance. A higher score on each subscale indicates an intrinsic orientation toward motivation in the classroom.

Conditions in the learning environment. Based on Samuels' (1986) description of conditions ripe for student failure, 10 statements were developed. The statements specified important conditions that, when they exist in the home, school (via teachers and principals), and community, create a total learning environment. Each of the items was rated by interviewers on a 4-point Likert-type scale with "1" indicating that the item was "not at all like the child's learning environment" and "4" indicating that the item was "very much like the child's learning environment." These 10 items, which appear in Appendix A, are referred to as the Conditions in the Learning Environment Scale (CLES).

Behavior. Information on students' behavior was collected using the Behavior Rating Profile (BRP) (Brown & Hammill, 1978). The BRP is a prepared list of 30 statements that regular and special education teachers, parents, and students rate as being like or not like a particular student.

Procedures

Parent permission. During the project's first year, parent permission for observation and achievement testing was obtained for students randomly selected from grades 2-4 in the participating schools. In the fall of the second year, after the list of all subjects who met the criteria for matching was generated, parents were sent a letter and permission form to cover the collection of additional information. Obtaining signed parent permission the second time was a time consuming task. In some cases, it was an impossible task. Of the 66 handicapped students identified as potential subjects for the matching study, parent permission was obtained via mail for 26 students (10 LD, 7 EBD, 9 EMR); parent permission was obtained after follow-up telephone calls for 32 students

(10 LD, 12 EBD, 10 EMR); parent permission was not obtained despite significant follow-up for 3 students (EBD), and 5 parents were unwilling to have their child participate (2 LD, 2 EBD, 1 EMR).

Training and data collection procedures. Data collection began with the collection of CISSAR observational data and BASIS achievement data. Observations and achievement testing were conducted on 92 students as part of a larger ongoing study. Data collection then proceeded to administration of the WISC-R, A Scale of Intrinsic Versus Extrinsic Orientation, the Behavior Rating Profile, and the Student Cognitions Questionnaire. These were followed by home interviews and then teacher interviews.

Data on all measures were collected primarily by advanced graduate students, with some assistance from the other data collectors on the self-report social-emotional questionnaires (Behavior Rating Profile, A Scale of Intrinsic Versus Extrinsic Orientation, Student Cognitions Questionnaire). These measures were administered in the school setting, with the exception of two cases, in which tests were administered in the students' homes.

Advanced graduate students completed the home interviews; all interviews were conducted in the students' homes and lasted approximately one hour. Parents were paid $15.00 for participation in the interview.

Training for the home interviews was done in pairs, beginning with the two individuals who had developed the semi-structured interview. The trainer conducted the home interview while a trainee observed; ratings were completed and compared after the home interview. The trainee conducted a second home interview while the trainer observed and ratings were compared. Training continued until both members of the pair were confident that the trainee was

ready to interview independently and inter-rater agreement met a minimal predetermined standard. Home ratings were on a 4-point Likert-type scale, with "1" indicating "not at all like the child's home environment" and "4" indicating "very much like the child's home environment." Inter-rater agreement was calculated in two ways: Grouped and Exact. For grouped agreement, ratings of 1 and 2 were combined and ratings of 3 and 4 were combined. The minimal predetermined standard of agreement between the two interviewers was 7 out of 9 items or 78%. Exact agreement occurred when both interviewers coded the exact same rating on the 4-point scale; agreement had to reach a minimal standard of 56% (i.e., 5 out of 9 items). After trainees were competent interviewers, they trained other interviewers. Inter-rater agreement was checked 14 times during the study on 7 pairs of interviewers. Average inter-rater agreement for grouped items was 91.3%; exact agreement was 70.6%.

Graduate students interviewed both regular and special education teachers for the LD and EBD students served in resource rooms, and only the special education teacher for EMR students served in self-contained classrooms. In general, the teacher interview lasted 20 minutes. The interviewer recorded the teacher's response to seven open-ended questions. In addition, teachers were asked to rate the degree of stress they experienced in teaching in general and in teaching handicapped students; ratings were on a five-point Likert scale, where "1" indicated "not at all stressful" and "5" indicated "extremely stressful."

The Conditions in the Learning Environment Scale (CLES) was completed by individuals conducting home interviews, teacher interviews, social-emotional measures, and principal interviews. All items rated are listed in Appendix A.

After completing social-emotional testing, interviewers rated items 3, 7 and 10. Home interviewers rated items 1, 4, 5 and 7. Items 6, 7, 8 and 9 were rated after interviews with regular and special education teachers, and item 2 was rated after the principal interview. Multiple sources of information were available for items 6, 7, 8 and 9.

Data collectors rated the appropriate statement on a four point Likert-type scale, with "1" indicating "not at all like the child's learning environment" and "4" indicating "very much like the child's learning environment." No specific training was provided for this rating. The data collectors rated the degree to which they thought the statement applied to the child's learning environment.

Data Analysis

The purpose of this study was to describe how various factors related to academic success explain differences in reading achievement for mildly handicapped students who were matched on academic engaged time. Differences among categories of students (LD, EBD, EMR) in the factors important for achievement also were investigated. In order to explain differences in reading achievement for the 23 matched pairs (8 LD, 7 EBD, 8 EMR) showing comparable amounts of engaged time, two levels of analyses were conducted.

In the first level of analysis, the status of higher and lower achieving students (within grade and category of handicapping condition) was compared on various individual factors to determine their relevance as explanations for achievement differences. Subjects within each pair were compared in terms of their performance on each of eight measures: student demographic information, the WISC-R, A Scale of Intrinsic Versus Extrinsic Motivation, the Behavior

Rating Profile, Student Cognitions Questionnaire, Conditions in the Learning Environment Scale, ratings of teacher stress, and home and family factors.

For the next level of analysis, second-order factors were created by aggregating specific items from the first-order factors (e.g., home and family variables, teacher stress, conditions in the learning environment). Three second-order factors were created: generalized stress/chaos within the child's environment, home-school cooperation, and attitude/modeling by significant others in the child's life.

Nonparametric statistical procedures were used to test for achievement differences on categorical data. The degree of independence of each factor and achievement for pairs of LD, EBD, and EMR students and for the total sample of handicapped students was assessed using chi-square analyses. Because of the small number of independent matched pairs within each of the handicapping conditions, cell frequency rules of the chi square test were sometimes violated and Fisher's Exact Test was applied to correct the problem.

It was impossible to conduct parametric statistical analyses (e.g., ANOVA) due to the small sample size. Because of this limitation and because the purpose of this study was to provide in-depth description of factors important in differentiating reading achievement for students matched on academic engaged time, a case study methodology was used. The standard deviation or Z-score information from the WISC-R, A Scale of Intrinsic Versus Extrinsic Orientation, and Behavior Rating Profile was used as the criterion for a significant difference between paired students. Thus, a 15-point discrepancy was used on verbal, performance and full scales of the WISC-R. The standard deviation for each subscale on A Scale of Intrinsic Versus Extrinsic Orientation was:

Challenge = .63, Curiosity = .77, Mastery = .62, Judgment = .45, and Criteria = .67. The standard deviation of the Behavior Rating Profile, which was three points, was applied to the standard score for each student in the pair to indicate a difference in behavioral rating.

A difference between the pairs of students was determined by a decision rule for the Student Cognitions Scale and the Conditions in the Learning Environment Scale. For each scale, the numbers of pairs in which there was a directional difference (positive ratings vs negative ratings) were calculated. Each item on the Student Cognitions Scale was answered on a 4-point scale (1 = rarely, 2 = sometimes, 3 = often, and 4 = almost always). Means were computed for each of the five subscales and means of 1 and 2 were grouped to indicate a low value on a subscale, while means of 3 and 4 were grouped together to indicate a high value. The higher and lower achieving students were considered different if one student scored in the low value range and the other in the high value range on a subscale. Data were missing for some students on many subscales of the Student Cognitions Questionnaire, due to the fact that students answered "don't know" to several items within a scale. These data were dropped out of the analysis; matched pairs were compared on a subscale only if both students had complete data. For the Conditions in the Learning Environment Scale, a mean of the 10 statements was computed. Students within pairs were compared on whether the mean rating of the learning environment was generally positive (i.e., 3 or 4) or negative (i.e., 1 or 2).

For all first-order factors, data were tabled according to whether the higher achiever in reading, compared to the lower achiever within a matched pair, received a higher (H > L), lower (H < L) or approximately equal score

(H = L). The students were not necessarily high or low achievers in comparison with their peers, only in comparison with their matched student.

Second-order factors were created by aggregating specific items from the data sources for the first-order factors. All items were drawn from the home interview, learning environment ratings, and teacher interview. Individual items were grouped into the second-order factor on a logical, not empirical, basis due to the small sample size. The attitude/modeling by significant others factor (see Appendix B) contained 25 individual items, the home-school cooperation factor (see Appendix C) contained 13 items, and the stress/chaos factor (see Appendix D) contained 17 items.

For each second-order factor, the status of higher and lower achieving students within pairs was compared on each individual item that comprised the factor. For each pair, the number of items in which the higher achiever scored higher, lower, or approximately equal was tallied. The total number of items in which the higher achiever scored higher, lower, or equal was computed across all pairs within each category.

Results

FIRST ORDER FACTORS

A .05 level of significance was adopted for all chi-square analyses of student demographics, home and family factors, and teacher stress. Using this criterion, 8 of 120 analyses were significant. The number of pairs in which the higher achiever scored higher, lower, or equal to the lower achiever in a matched pair for cognitive, student cognitions, learning environment, motivation and behavior ratings is shown in Table 3. For all descriptive analyses, results are reported in the text for all students combined, except when differences

Table 3

Comparison of Higher and Lower Achieving Matched Pairs on Each Factor by Category[a]

	LD			EBD			EMR			TOTAL		
Factor	H>L	H<L	H=L	H>L	H<L	H=L	H>L	H<L	H=L	H>L	H<L	H=L
Cognitive												
Verbal IQ	3	-	5	5	1	1	3	-	5	11	1	11
Performance IQ	5	1	2	3	1	3	5	1	2	13	3	7
Full scale IQ	5	-	3	4	1	2	5	-	3	14	1	8
Student Cognitions												
Poor listening	2	-	5	-	-	5	2	-	5	4	-	15
Positive listening	2	1	5	2	2	3	-	2	6	4	5	14
Cautious style	-	3	4	2	1	3	-	2	6	2	6	13
Active thinker	2	3	3	1	1	3	-	2	6	3	6	12
Understanding	-	2	5	1	1	3	-	1	5	1	4	13
Learning Environment												
Learning environment	-	-	8	1	-	6	-	2	6	1	2	20
Student Motivation												
Challenge	2	1	5	1	4	2	2	1	5	5	6	12
Curiosity	5	1	2	1	-	6	-	-	8	6	1	16
Mastery	2	1	5	1	2	4	2	2	4	5	5	13
Judgment	2	2	4	3	1	3	2	4	2	7	7	9
Criteria	1	3	4	1	1	5	2	3	3	4	7	12
Behavior Ratings												
Student rating of home behavior	3	1	4	2	2	3	3	4	1	8	7	8
Student rating of school behavior	4	-	4	1	1	5	2	3	3	7	4	12
Student rating of behavior with peers	1	1	6	3	3	1	3	4	1	7	8	8
Parent rating of home behavior	4	2	2	3	-	3	2	2	3	9	4	8
Regular teacher rating of school behavior	3	-	4	1	-	2	-	-	1	4	-	7
Special teacher rating of school behavior	2	-	4	1	3	2	1	3	4	4	6	10

[a]Entries denote number of pairs; number of pairs varies due to missing data. Columns indicate numbers within three groups:
H>L: higher achiever received higher score than lower achiever in pair
H<L: higher achiever received lower score than lower achiever in pair
H=L: scores were approximately equal for higher and lower achiever in pair

among the categories emerged. Descriptive results are always reported for what happens for the higher achieving student in the pair. All results are reported for matched pairs and do not indicate that the students are high or low achievers in relation to their peers.

Student Demographic Factors as an Explanation

The only student demographic variable that reached significance in the chi-square analyses was race, X^2 (1, N = 46) = 4.57, p = 03. For the LD, EBD and EMR groups combined, more non-minority students were in the higher achieving group than minority students.

Home and Family Factors as an Explanation

Of 24 home and family factors analyzed, only two reached significance in the chi-square analyses: (a) the people a child lived with, and (b) the amount of student reading in the home. Most higher achieving EBD students lived with both parents, whereas all lower achieving EBD students lived with a single parent, X^2 (2, N = 13) = 6.96, p = .03. EBD students with higher reading achievement read more in the home than lower achievers, X^2 (2, N = 13) = 9.55, p = .01.

Teacher Stress Factors as an Explanation

The general level of stress reported by regular education teachers, X^2 (2, N = 30) = 13.63, p = .001, and the level of stress reported by regular education teachers in working with handicapped students, X^2 (2, N = 30) = 12.42, p .002, were significant in the chi-square analyses for all groups combined. For both variables, there was less stress reported by teachers of higher achieving students than teachers of lower achieving students. For the LD group, the level of stress reported by regular education teachers in working with handicapped

students was significant, X^2 (2, N = 15) = 7.54, p = .02. Teachers of higher achieving LD students reported less stress in teaching handicapped students. For EBD students, both the general level of stress reported by regular education teachers, X^2 (2, N = 10) = 7.22, p = .03, and regular education teachers' stress in working with handicapped students, X^2 (2, N = 10) = 6.88, p = .03, were significant. Teachers of higher achieving EBD students reported less stress than teachers of lower achievers.

Cognitive Factors as an Explanation

The standard deviation of the WISC-R (15 points) was used to describe a difference between matched pairs on the verbal, performance and full scales.

Verbal IQ. Data for all descriptive analyses are reported in Table 3. Of a total of 23 matches, in 11 the higher achiever received a higher verbal IQ than the lower achiever. In 11 matches the two students' scores fell within the same range (a difference of less than 15 points). In only one case did the higher achiever have a lower verbal IQ than the lower achiever. This pattern was consistent across the LD, EBD and EMR categories: higher achievers scored higher or equal to their lower achieving matched pair.

Performance IQ. In 13 of 23 matches, the higher achiever received a higher performance IQ than the lower achiever. In seven matches the two students had approximately equal performance IQs. In three matches the higher achiever had a lower performance score than the lower achiever. Again, this pattern was consistent for LD, EBD, and EMR students: in general, higher achievers had performance IQs that were higher than or equal to those of the lower achievers.

Full Scale IQ. In the majority of matches (14 of 23), the higher achiever received a higher full-scale IQ than the lower achiever. Eight matches were in the approximately equal category, and in one match the higher achiever received a lower full scale score than the lower achiever. Across all categories of students, higher achievers scored higher than or equal to lower achievers. Across the verbal, performance and full scales, performance of higher achieving students was greater than or equal to that of the lower achieving students in almost all cases and within all categories of handicapping condition.

Student Cognitions as an Explanation

Means for each student on each subscale were compared to determine whether these characteristics differentiated higher from lower achieving students within pairs. Means of 1 and 2 were grouped together to indicate a low value on a subscale and 3 and 4 were grouped together to indicate a high value. The higher and lower achieving students were considered different if one student scored in the 1-2 range and the other in the 3-4 range.

Poor listening. Data were missing from students in four of the matched pairs. Of the remaining 19 pairs, 15 had scores that were approximately equal; in four pairs the higher achiever reported fewer problems with poor listening than the lower achiever. No differences in this pattern were noted among the LD, EBD and EMR groups; most matches had approximately equal scores on poor listening.

Positive listening. Differences were noted among the categories on positive listening. For LD and EBD pairs, there was a fairly even division in whether higher achievers scored higher, lower, or approximately equal to lower achievers. In contrast, higher achieving EMR students scored equal (6 of 8) or lower (2 of 8) on positive listening than lower achievers.

Cautious style. Data were missing from two of the matched pairs. For the remaining 21 pairs, differences emerged among categories on "cautious style." In most of the EMR pairs, students had approximately equal scores (6 of 8 pairs); in two cases the higher achiever showed a less cautious style than the lower achiever. Pairs of LD students also had either approximately equal scores (4 of 7 pairs) or higher achievers scoring lower on cautious style (3 of 7 pairs). In contrast, higher achieving EBD students compared to their lower-achieving matched pair, scored higher (2 of 6 pairs) or approximately equally (3 of 6 pairs) on cautious style.

Active thinker. Data were missing for two of 23 pairs. Scores were approximately equal for 12 matches; the higher achiever scored higher in three cases, and the higher achiever scored lower in six cases on active thinking. LD and EBD pairs were fairly evenly divided in whether higher achievers scored higher, lower, or approximately equally to lower achievers, whereas higher achieving EMR students scored about equal to (6 of 8 pairs) or lower (2 of 8 pairs) on active thinking than their lower achieving matched pair.

Understanding. In 5 of 23 matches, students answered "don't know" to several items. In 13 pairs, the scores were approximately equal. In one case tne nigher achiever scored higher than the lower achiever; in four cases the higher achiever scored lower. No differences were noted among the categories; most scores were approximately equal.

Student Motivation as an Explanation

The standard deviation of each of the five subscales was used as the criterion to describe a difference between pairs of students matched on engaged time. The standard deviations were: Challenge = .63, Curiosity = .77, Mastery

= .62, Judgment = .45 and Criteria = .67. A higher score on a subscale indicated a more intrinsic orientation.

Challenge. Of 23 pairs, 12 had approximately equal scores on preference for challenge, five resulted in the higher achiever scoring higher than the matched lower achiever, and six resulted in the higher achiever scoring lower than the matched lower achiever. The only difference noted among the categories was for the EBD students. In the majority of EBD pairs (4 of 7), the higher achiever showed a lower preference for challenge than the lower achiever. The majority of LD and EMR matches fell within the approximately equal category.

Curiosity. Differences were noted among the categories on the curiosity subscale. For the EBD and EMR groups, 14 of 15 matches were in the approximately equal category. In five of eight LD matches, however, the higher achiever scored higher than the lower achiever; in one match the higher achiever scored lower, and in two matches the scores were approximately equal.

Mastery. Of 23 pairs, 13 had approximately equal scores on mastery. In five cases the higher achiever scored higher than the lower achiever, and in five cases the higher achiever scored lower. No differences were noted among the categories.

Judgment. Differences were noted among the categories on the judgment scale. EBD students tended to have a more intrinsic orientation to judgments about schoolwork than the other two groups. In three EBD matches the higher achiever scored higher than the lower achiever, in three matches the scores were approximately equal, and in one match the higher achiever scored lower. Half of the LD matches were in the approximately equal category (4 of 8), with the remaining four matches falling equally in the high > low and high < low

categories. Higher achieving EMR students showed a more extrinsic orientation in judgments, with 4 of 8 pairs in the high < low category. In two pairs the higher achiever had a more intrinsic orientation, and in two pairs the scores were approximately equal.

Criteria. Scores on the use of internal/external criteria to judge schoolwork were approximately equal for 12 of 23 pairs. In four cases, higher achievers showed a more intrinsic orientation than lower achievers; in seven cases, higher achievers showed a more extrinsic orientation than lower achievers. No differences appeared among the categories.

Conditions in the Learning Environment as an Explanation

A mean was calculated across 10 ratings of the learning environment (see Appendix A). The learning environments of the two students were considered different if one mean was in the 1-2 range and the other was in the 3-4 range. Of 23 matches, 20 had approximately equal scores on conditions in the learning environment. For one EBD match, the higher achiever had a higher learning environment score than the lower achiever. In two EMR matches the lower achiever scored higher on learning environments than the higher achiever.

Behavior as an Explanation

The standard deviation of the Behavior Rating Profile (3 points) was used as the criterion for determining a difference between students within pairs.

Student ratings of behavior at home. Across all categories, approximately equal numbers of pairs were in the high > low, high < low and approximately equal categories. Some differences were noted among the categories, however. No differences were noted for EBD students as to whether higher achievers reported more, fewer, or approximately equal behavior problems compared to lower

achievers. For LD students, higher achievers reported more behavior problems than lower achievers in three of eight pairs; in four pairs the scores were approximately equal, and in one case the higher achiever reported fewer behavior problems. For EMR students, the higher achiever reported more problems in three pairs. In four EMR pairs, the higher achiever reported fewer problems. In one case the scores were approximately equal.

Student ratings of behavior at school. Some categorical differences emerged in students' ratings of their behavior at school. For EBD students, most pairs of higher and lower achievers reported approximately equal numbers of behavior problems at school (5 of 7 pairs). Higher achieving LD students reported equal (4 of 8 pairs) or more behavior problems (4 of 8 pairs) than lower achieving LD students. For EMR students, no differences were noted in wnether higher achievers reported more, fewer or approximately equal behavior problems as lower achievers.

Student ratings of problems with interpersonal relationships. Overall, approximately equal numbers of students were in the high > low, high < low and approximately equal categories. For higher achieving EBD and EMR students, equal numbers of students rated themselves as higher and lower on interpersonal problems compared to lower achieving students. Higher and lower achieving LD students reported no differences in problems with interpersonal relationships.

Parent rating of child's behavior. Differences among categories were noted in parental ratings of their child's behavior. Parents of higher achieving EBD students rated their child's behavior as equally or more problematic than did parents of lower achieving EBD students. For the LD and EMR students, no differences were noted in the majority of parent ratings of problem behaviors.

Regular education teacher ratings of child's behavior. Data were not available for 12 of 23 pairs. Information was missing most often for EMR students because they spent little or no time with regular education teachers. The only significant difference noted was for LD students. Teachers of higher achieving LD students rated them as having equal or more behavior problems than lower achieving LD students.

Special education teacher ratings of child's behavior. Overall, data were missing for three pairs. For the EBD and EMR groups, lower achievers were rated as having equal (6 of 14 pairs) or more (6 of 14 pairs) behavior problems than higher achievers. Higher achieving LD students were rated as having more (2 of 6 pairs) or equal (4 of 6 pairs) behavior problems than lower achieving students.

SECOND ORDER FACTORS

The results for each pair by category are displayed in Table 4 for the three second-order factors: attitudes/modeling by significant others, home-school cooperation, and stress/chaos. The results of the attitude/modeling by significant others factor indicates that across the LD, EBD, and EMR pairs, the majority of ratings fell within the approximately equal category. Measures of attitudes and modeling by significant others in the child's environment did not explain differences in reading achievement. The factors of home-school cooperation and stress in the child's environment also were not consistent explanations for achievement differences. Again, most ratings fell within the approximately equal category.

Table 4

Comparison of Higher and Lower Achieving Matched Pairs on Three Composite Factors by Category.

	Second-Order Factor											
	Attitudes/Modeling by Significant Others (25 items)				Home-School Cooperation (13 items)				Stress/Chaos (17 items)			
Category	H>L	H<L	H=L	Missing	H>L	H<L	H=L	Missing	H>L	H<L	H=L	Missing
LD												
Pair #1	1	2	17	5	-	-	12	1	7	2	8	-
2	-	9	14	2	2	4	7	-	3	1	13	-
3	4	2	18	1	-	1	11	1	7	3	7	-
4	3	2	19	1	2	1	10	-	4	6	7	-
5	3	2	18	2	-	-	13	-	5	4	8	-
6	4	5	14	2	4	1	8	-	5	2	10	-
7	2	4	16	3	-	-	13	-	4	3	8	2
8	4	3	15	3	1	-	12	-	4	2	9	2
LD Total	21	29	131	19	9	7	86	2	39	23	70	4
EBD												
Pair #1	10	1	4	10	5	-	2	6	6	1	6	4
2	2	1	13	9	-	4	3	6	4	2	11	-
3	6	1	15	3	-	1	12		1	4	10	2
4	3	2	19	1	-	2	11		4	4	9	-
5	-	4	20	1	-	6	7		9	2	6	-
6	-	2	1	22	-	-	-	13	-	-	2	15
7	7	5	8	5	2	3	8		3	5	7	2
EBD Total	28	16	80	51	7	16	43	25	27	18	51	23
EMR												
Pair #1	-	1	2	22	-	-	13	-	-	-	2	15
2	2	1	20	2	-	-	12	1	1	3	11	2
3	2	3	17	3	1	-	12	-	4	1	10	2
4	2	4	14	5	3	1	9	-	4	4	7	2
5	4	10	6	5	1	4	8	-	6	7	2	2
6	1	1	15	8	-	-	8	5	7	5	5	-
7	3	4	16	2	-	3	9	1	1	4	10	2
8	1	1	10	13	1	1	6	5	3	3	9	2
EMR Total	15	25	100	60	6	9	77	12	26	27	56	27

Note: The numbers in the table represent the numbers of individual items in each second-order factor on which the higher achieving student was rated higher (H > L), lower (H < L), or approximately equal (H = L) to the lower achieving student. For example, for LD pair #1, the higher achiever was rated higher on 1 of 25 items pertaining to attitudes/modeling by significant others, rated lower on 2 items, approximately equal on 17 items, and information was missing for 5 items.

Discussion

The purpose of this study was to examine alternative explanations for achievement differences in mildly handicapped students classified as LD, EBD, and EMR whose academic engagement rates were comparable. Eight explanations were examined in addition to three composite factors. The only factor that emerged as a consistent explanation for the three handicap groups was cognitive ability. The higher achiever in the matched pairs of LD, EBD, and EMR students scored higher than or equal to the lower achieving student on a cognitive measure. This was the only explanation for which a clear-cut pattern emerged. Performance on measures of cognitive ability appeared to be a consistent explanation for achievement differences when engaged time was held constant.

Moderately high correlations between measures of intellectual activity and achievement across many subject areas have been found in several studies (Brooks, 1977; Drudge, Reilly, Rosen, Fischer, & Loew, 1981; Hartlage & Steele, 1977). In general, IQ tests correlate about .50 with achievement, indicating that IQ accounts for approximately 25% of the variance in academic performance (Lavin, 1965). Although IQ is a strong predicter of achievement, 75% of the variance in achievement is accounted for by factors other than IQ, such as cognitive entry behaviors (Bloom, 1976), student attention, time engaged in the learning process (Karweit, 1983; Peterson et al., 1984), home and family factors (Marjoribanks, 1979), and instructional factors (Ysseldyke, Christenson, & Thurlow, 1987). The latter factors are "alterable" to some extent, and therefore have important implications for individual students, particularly those children who have measured lower intelligence (Bloom, 1980). Carroll (1984) aptly reminds educators that proper use of time in school may result in increases in student aptitude and overall performance.

Although most of the explanations investigated did not provide a consistent explanation for reading achievement differences for handicapped students with similar engaged time rates, regardless of categorical designation, several isolated, interesting findings emerged. These are reported here for each explanation.

Student demographic. Across all handicap groups, higher achieving students tended to be non-minority students.

Home and family. Higher achieving EBD students tended to live with both parents, whereas lower achievers lived with only one parent. Higher achieving EBD students also read more at home.

Teacher stress. Regular education teachers of higher achieving LD and EBD students tended to experience less stress in teaching handicapped students. Teaching students who are making progress may reduce teacher stress. It may also be the case that teachers who are experiencing less stress are more effective instructors, and therefore, student achievement is higher. A few related studies support the finding that teachers experiencing less stress have students with higher achievement (Coleman, 1966; Glasman & Biniaminov, 1981).

Student motivation. Higher achieving EBD students tended to have a more extrinsic preference for challenge, and a more intrinsic orientation toward judgments about school work than lower achieving EBD students. Higher achieving LD students tended to be more internally directed with regard to curiosity. Higher achieving EMR students tended to be more externally oriented toward judgments about their school work.

Behavior. Higher achieving LD students rated themselves as having more behavior problems at home and school and also were rated by their regular and

special teachers as having more behavior problems than lower achieving LD students. Parents of higher achieving EBD students tended to view the child's behavior as more problematic than did either their teachers or the students themselves. Finally, special education teachers rated the behavior of lower achieving EBD and EMR students as more problematic than of higher achievers in either category.

Creating composite variables, specificallly attitude/modeling by significant others, stress/chaos in the child's environment, and home-school cooperation, was not helpful in explaining reading achievement differences for the matched sample. These factors may have intuitive appeal as explanatory concepts, but did not serve as consistent explanations for high and low reading achievement. The approach used in developing the composite factors was to examine the single influence of all the items categorized within a composite factor (e.g., stress/chaos). It is most likely, however, that the items comprising the factor are interactive in their effects, and only a larger sample and parametric procedures would disclose such relationships. Similarly, each explanation for students with high and low reading achievement but comparable amounts of engaged time was examined separately in this study. It may be that many factors contribute simultaneously to student achievement and have a synergistic effect on student performance. Again, the explanations investigated may be interactive in nature.

Several limitations of this study need to be noted. First, many statistical procedures, such as ANOVA, regression, or factor analysis, were inappropriate due to the small sample sizes. The descriptive approach, while intensive in terms of the number and thoroughness of the explanations examined,

makes it difficult to draw definitive conclusions. Second, chi-square analyses were used to examine the relationship of student demographic, home and family, and teacher stress explanations with reading achievement. Of 120 analyses conducted, 8 were significant at the .05 level. Given the small sample size and number of tests conducted, 5-6 significant results would be expected due to Type I error. Based on these limitations, it is not possible to make strong statements about these factors as explanations for differences in reading achievement for handicapped students matched on academic engaged time. Third, academic engaged time data were collected the year previous to data collection for the explanations; it is unknown whether students' engaged time data was stable across the two years.

In general, with the exception of the cognitive explanation, the results from the descriptive study do not indicate a clear-cut pattern of factors important for reading achievement for the three handicap groups. Rather, factors vary for individual students, even for students within the same handicapping condition. The need for diagnosticians to engage in problem solving for individual children rather than for children labeled as LD, EBD, or EMR is suggested by the findings. Broadening learning assessments from looking at internal student characteristics as the sole explanation for reading achievement toward looking at the interaction of student characteristics with instructional, home and teacher characteristics is needed.

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Appendix A

Conditions in the Learning Environment Scale

Instructions

Rate the extent to which the following are characteristic of the student's learning environment. Select one of 4 ratings: 4 means the statement is very much like the student's learning environment; 3 means the statement is somewhat like the student's learning environment; 2 means the statement is not much like the student's learning environment; and 1 means the statement is not at all like the student's learning environment. Circle only one rating.

1.	The home is supportive of school efforts.	4	3	2	1
2.	The community is supportive of school efforts.	4	3	2	1
3.	The student appreciates the value of hard work and education.	4	3	2	1
4.	High moral standards and values are fostered in the home.	4	3	2	1
5.	Members of the home help the child with schoolwork.	4	3	2	1
6.	Strong administrative leadership exists in the school.	4	3	2	1
7.	A rationale for working hard in school has been provided.	4	3	2	1
8.	The teaching style is task-oriented and humanistic.	4	3	2	1
9.	There is a strong belief that the school makes a difference for its students.	4	3	2	1
10.	The student's attitude toward school and learning is positive.	4	3	2	1

Appendix B

Attitude/Modeling by Significant Others Factor

Individual items:

Home interview:

1. Parent ratings of quality of math instruction in child's school.
2. Parent ratings of quality of reading instruction in child's school.
3. Number of hours/week parent reads at home.
4. Amount of schooling mother wants for her child.
5. Amount of schooling mother expects child to attain.
6. Mother's education level.
7. Father's education level.
8. Mother's level of satisfaction with the school.
9. Rating: "There is enough homework."
10. Rating: "There is enough discipline."
11. Rating: "Too much time is spent on art, music and drama."
12. Rating: "Too much time is spent on special help for children with problems."
13. Rating: "The school is generally well run."
14. Rating: "Not enough money is spent on education."
15. Rating: "How well do you expect your child to do in school this year?"

Interviewer's Summary Rating After Home Interview:

16. There is an emphasis on the value of education within the home.
17. Parents hold high, but reasonable expectations for their child's educational and employment possibilities.
18. The physical environment of the home exhibits some order and organization conducive to the development of organizational skills relevant in the school environment.

Appendix B

Attitude/Modeling by Significant Others - (continued)

Learning Environment Conditions:

19. Rating from home interview: High moral standards and values are fostered in the home.

20. Rating from student interview: A rationale for working hard in school has been provided.

21. Rating from home interview: A rationale for working hard in school has been provided.

22. Rating from interview with regular education teacher: A rationale for working hard in school has been provided.

23. Rating from interview with special education teacher: A rationale for working hard in school has been provided.

24. Rating from interview with regular education teacher. There is a strong belief that the school makes a difference for its children.

25. Rating from interview with special education teacher: There is a strong belief that the school makes a difference for its children.

Appendix C

Home-School Cooperation Factor

Individual items:

Home interview:

1. "Teachers are very friendly."
2. "Teachers seem to treat all children fairly."
3. "Teachers seem interested in _____'s education."
4. "Teachers give the impression that they want to keep parents out of school."
5. "I get enough information from the school about how _____ is doing."
6. "Do you know what _____ is learning (or has just finished doing) in reading, language or math?
7. "When do you talk with the people at _____'s school?"
8. "Did you discuss the last report card with _____?"

Interviewer's Summary Ratings after home interview:

9. There is practical support available for academic progress.
10. The parents are supportive of the child's school.

Learning Environment Conditions

11. Rating from home interview: The home is supportive of school efforts.
12. Rating from home interview: Members of the home help the child with school work.

Teacher Interview

13. "We are interested in whether you believe your efforts are supported by _____'s family. Describe their involvement with his/her school work or school life."

Appendix D

Stress/Chaos Factor

Individual items:

Home interview:

1. Adults that the child lives with.
2. Number of schools the child has attended.
3. Number of moves the child has made in his/her life.
4. Whether the child has lived with another family.
5. Whether the child has ever suffered serious illness.
6. Whether family members have suffered serious illness.
7. Deaths in the family.
8. Whether separation/divorce/marriage occurred within the family.
9. Other stresses in the family's life.

Teacher Interview:

10. Regular education teachers' rating of general stress in teaching.
11. Regular education teachers' rating of stress in teaching handicapped students.
12. Special education teacher's rating of general stress in teaching.
13. Special education teacher's rating of stress in teaching handicapped students.

Interviewer's Summary Ratings after home interview:

14. There is a predicatability and a basic routine to daily and weekly life.
15. The child's life is/has not been a stressful one.
16. Tne family provides a secure environment for the child.
17. Direction or structure is provided by the parent for out-of-school time.

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